

## A New Gobiid Fish of the Genus *Eviota* from Cape Sata, Japan

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**Abstract** A new gobiid fish, *Eviota lacrimae* is described, on the basis of specimens collected from Cape Sata, Japan. This new species is distinguished from other species of the genus by the following characters: lacking IT and POP pores of the sensory organ; pelvic fin I, 4 and its fin membrane reduced between rays; fourth soft ray of pelvic fin with two branches.

The genus *Eviota* is one of the large groups of the Gobiidae. Forty-one species of the genus have been reported from the Indo-Pacific region (Lachner and Karnella, 1980; Karnella and Lachner, 1981; Jewett and Lachner, 1983). They are small gobies, found in the shallow waters of coral or rocky reefs. Recently, an undescribed species of the genus was collected from Cape Sata, Japan. It is described as a new species in this paper.

### Materials and methods

All specimens were collected by the author from Cape Sata, Kagoshima Prefecture, Japan (31°0'N, 130°40'E). Specimens were preserved in 70% ethanol after being fixed in 5% formalin. They have been deposited in the National Science Museum, Tokyo (NSMT-P) and the Department of Marine Sciences, University of the Ryukyus (URM-P).

Methods for counts and description of cephalic sensory pores and cutaneous papillae system and for measurements followed Lachner and Karnella (1978, 1980), and Hubbs and Lagler (1958) by using a binocular microscope (Nikon SMZ 10) with an ocular micrometer. The number of vertebrae was counted from X-ray photographs.

**Comparative materials.** *Eviota sparsa* Jewett et Lachner, 1983; CAS (California Academy of Sciences) 52741, 2 females, 14.2 mm in standard length (SL) and 16.0 mm SL, Big Hope Island, Queensland, Australia, collected by J. Tyler and G. Bettle, Jan. 19, 1969.

*Eviota lacrimae* sp. nov.

(New Japanese name: Yami-isohaze)

(Figs. 1-4)

**Holotype.** NSMT-P 41874, 12.5 mm SL, male, Jul. 30, 1985.

**Paratypes.** NSMT-P 41875, 13.7 mm SL, male; NSMT-P 41876, 14.6 mm SL, female; NSMT-P 41877, 13.5 mm SL, female; URM-P 18779, 14.0 mm SL, male. All collected on Jul. 2, 1983.

**Diagnosis.** Cephalic sensory pore system lacking IT and POP pores. Pelvic fin I, 4, and its membrane reduced between rays. Fourth soft ray of pelvic fin with two branches. Male genital papillae not fimbriate.

**Description.** Counts and measurements are shown in Table 1. Body compressed, slightly stocky; caudal peduncle very compressed. Head large, less compressed than body, its profile slightly steep from interorbital region to the tip of the snout. Eye oval, large, situated high and anteriorly, its diameter about 1.5 times as long as the length of the snout. Mouth oblique, relatively small; posterior edge of the upper jaw extending below the middle of the eye.

The first spine of the spinous dorsal fin in male elongated (damaged in NSMT-P 41875 and URM-P 18779). Pelvic fin extending to anus; the membrane reduced between soft rays (Fig. 2).

Cephalic sensory pore system pattern 5; cutaneous papillae system pattern B-1; gill membrane broadly attached to isthmus (Fig. 3). Genital papilla not fimbriate in male, bulbous in female (Fig. 4). Scales absent on head, nape, breast and pectoral fin base.

Color in fresh (Fig. 1 above) and living specimens: The following description is from a color slide of NSMT-P 41875 and observations of the specimens (NSMT-P 41875 and 41876) reared in an aquarium.

Ground color of the body and head pale-brown, uniformly pigmented, transparent in living specimens; belly lighter than the other part of the body; some dark spots on the head; seven faint vertical



Fig. 1. *Eviota lacrimae* sp. nov. Above, paratype, NSMT-P 41876, female, 14.6 mm SL; below, holotype, NSMT-P 41874, male, 12.5 mm SL.

Table 1. Measurements (% of SL) and counts of *Eviota lacrimae* sp. nov.

| Characters                                | Holotype        | Paratypes       |                 |                 |                |
|-------------------------------------------|-----------------|-----------------|-----------------|-----------------|----------------|
|                                           | NSMT-P<br>41874 | NSMT-P<br>41875 | NSMT-P<br>41876 | NSMT-P<br>41877 | URM-P<br>18779 |
| Depth of body                             | 22.4            | 25.5            | 23.3            | 18.5            | 22.9           |
| Length of head                            | 30.4            | 31.4            | 26.0            | 29.6            | 30.7           |
| Length of snout                           | 5.6             | 6.6             | 5.5             | 5.9             | 5.0            |
| Length of upper jaw                       | 9.6             | 8.0             | 8.2             | 8.9             | 8.6            |
| Diameter of eye                           | 10.4            | 9.5             | 8.2             | 9.6             | 8.6            |
| Width of interorbital                     | 2.4             | 2.9             | 2.7             | 2.2             | 2.1            |
| Length of pectoral fin                    | 38.4            | 29.1            | 35.6            | —               | 30.0           |
| Length of pelvic fin                      | 34.4            | 23.4            | 27.4            | 25.9            | 27.1           |
| Length of caudal fin                      | 28.0            | 25.5            | 23.3            | 20.0            | 30.7           |
| Length of caudal peduncle                 | 20.8            | 24.8            | 21.9            | 18.5            | 18.6           |
| Depth of caudal peduncle                  | 14.4            | 16.1            | 13.7            | 12.6            | 12.9           |
| Length of snout to first dorsal origin    | 40.8            | 43.8            | 39.7            | 38.5            | 41.4           |
| Length of snout to second dorsal origin   | 60.0            | 58.4            | 56.2            | 48.1            | 57.1           |
| Length of snout to pelvic origin          | 30.4            | 31.4            | 36.3            | 35.6            | 39.3           |
| Length of snout to anal origin            | 64.0            | 67.9            | 67.1            | 57.8            | 66.4           |
| Dorsal fin                                | VI-I, 8         | VI-I, 8         | VI-I, 8         | VI-I, 8         | VI-I, 8        |
| Anal fin                                  | I, 8            | I, 8            | I, 8            | I, 8            | I, 8           |
| Pectoral fin                              | 16              | 14              | 17              | 16              | 16             |
| Branched pectoral fin rays                | 0               | 1               | 0               | —               | —              |
| Pelvic fin                                | I, 4            | I, 4            | I, 4            | I, 4            | I, 4           |
| Branches in fourth soft ray of pelvic fin | 2               | 2               | 2               | 2               | 2              |
| Branched caudal fin rays                  | 12              | 12              | 12              | —               | —              |
| Segmented caudal fin rays                 | 17              | 16              | —               | 17              | 17             |
| Lateral scale rows                        | 23              | 23              | 23              | 23              | 23             |
| Transverse scale rows                     | 5               | 5               | 5               | 5               | 5              |
| Vertebrae                                 | 10+16           | 10+16           | 10+16           | 10+16           | 10+16          |

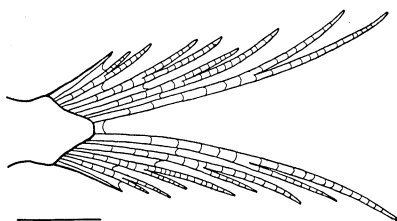


Fig. 2. Ventral view of pelvic fins of *Eviota lacrimae* sp. nov., paratype, URM-P 18779. Scale indicates 1 mm.

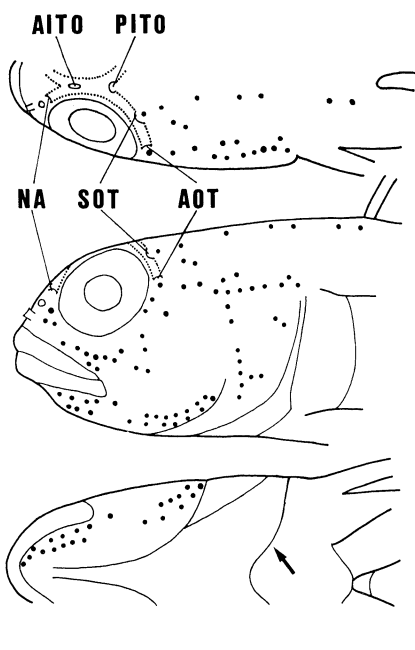


Fig. 3. Cephalic sensory pore system and cutaneous papillae system of *Eviota lacrimae* sp. nov., paratype, NSMT-P 41875. NA, paired nasals; AITO, anterior interorbital; PITO, posterior interorbital; SOT, paired supraotics; AOT, paired anterior otics. The arrow shows the gill membrane attached to the isthmus. Scale indicates 1 mm.

bars on the body from the origin of the spinous dorsal fin to the caudal peduncle, conspicuous in living fish. Iris reddish-brown. In female, a prominent pale-brown crescent marking at the upper base of the caudal fin.

White pigments on the vertical fins in female, absent in male; an oblique bar on the anterior lower portion of the spinous dorsal fin; basal portion of the second dorsal and anal fins with

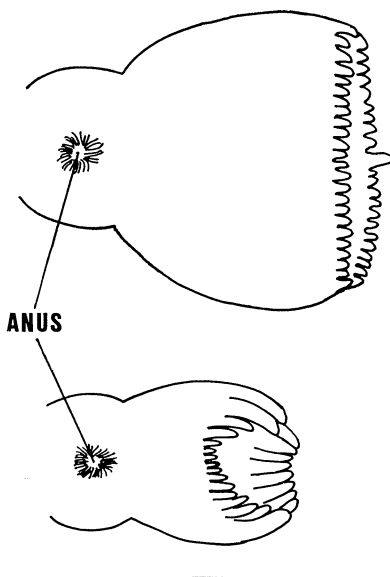


Fig. 4. Urogenital papillae of *Eviota lacrimae* sp. nov. Above, male, paratype, NSMT-P 41875; below, female, paratype, NSMT-P 41876. Scale indicates 0.5 mm.

some irregular patches; a small spot on the upper edge of the caudal fin base.

Most of scale pockets with a brownish crescent marking except NSMT-P 41875.

Color in preserved specimens (Fig. 1 below): Ground color of the body and head pale, finely speckled. Dark chromatophores arranged densely on the occiput, forming a pentagonal (NSMT-P 41874, 41875 and 41877) or V-shaped (NSMT-P 41876 and URM-P 18779) marking; one to three slender dark predorsal markings along the midline.

Two dark spots at positions of 3 and 5 o'clock in relation to the eye; a weak vertical band passing through the posterior edge of the maxillary, present below the eye extending to the ventral part of the head; a prominent dark band from the eye at 7 o'clock, across lips to chin.

Opercle with some irregular dark patches; number of patches varied among specimens; no dark patches on cheek. Fleishy base of the pectoral fin with two oblong dark spots, the lower darker than the upper.

Body with seven dark spots on dorsal midline from the second spine to the upper portion of the caudal fin base, the third one weak.

A series of seven spots along ventral midline

from the second anal soft ray to the lower portion of the caudal fin base; weak in the second and seventh.

Seven subcutaneous vertical body bars from the origin of the spinous dorsal fin to the caudal peduncle; the first and second subcutaneous bars originated from the first two dorsal spots respectively, leading to abdomen; the fourth and fifth dorsal spots connected with the first two ventral spots by the third and fourth subcutaneous bars; the fifth and sixth bars on the lower part of the caudal peduncle, joining at the midcaudal peduncle region, integrated with the fourth and fifth ventral midline spots respectively; the last one connecting a fine midcaudal spot with the sixth spot.

In male, the vertical fins pigmented uniformly except the upper portion of the elongated first dorsal spine. In female, the white pigments on the dorsal fin membrane absent, forming transparent spots among the dark pigments.

Most of the scales with a heavily pigmented scale pocket except NSMT-P 41875.

**Ecological notes.** This species is found in crevices between encrusting corals and rocky substrate at depth of 5 to 15 m. They were collected as solitary fish or as pairs.

**Remarks.** This species is closely related to *Eviota sparsa*, a member of Group VII (Jewett and Lachner, 1983), sharing the same cephalic sensory pore system and cutaneous papillae system. However, *E. lacrimae* is easily distinguished from *E. sparsa* by the following characters: reduced pelvic fin membrane (developed in the latter); fifth soft ray of pelvic fin absent (present); dorsal midline spots present (absent); seven spots on ventral midline (six).

**Etymology.** The specific name *lacrimae* is the genitive case of a Latin word meaning tear, in reference to the dark bar below the eye, across the lip to the chin.

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#### 鹿児島県佐多岬より得られたイソハゼ属の1新種

須之部友基

鹿児島県佐多岬から採集されたイソハゼ属の新種 *Eviota lacrimae* ヤミイソハゼ (新称) を記載した。本種は IT 管及び POP 管を欠き、腹鰭が1棘4軟条で、その第4軟条は2分枝し、腹鰭鰭膜が未発達であることから、同属の他種と容易に区別できる。

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